Using a Life-Stage Approach for Assessment of Children's Health Risk

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Environmental Issues
• What is the basis for differential risk?
• What are the outcomes that need to be considered in a life-stage focused risk assessment framework?
• What is the impact of exposure to environmental pollutants throughout development on human health outcomes?
• How do we consistently incorporate data on susceptible populations into the risk assessment process?

Framework for Children's Health Risk Assessment report can serve as a resource on children's health risk assessment and will address the need to provide a comprehensive and consistent framework for considering children's health risk assessment at the U.S. Environmental Protection Agency (U.S. EPA). This framework lays out the process, points to existing published sources for more detailed information on life-stage–specific considerations, and includes Web links to specific guidelines and guidance. The document emphasizes the need to take into account the potential exposures to environmental agents during preconception and all stages of development and focuses on the relevant adverse health outcomes that may occur as a result of such exposures. The document expands upon the Integrated Life Science Institute framework describing an approach that included problem formulation, analysis, and risk characterization and builds on Agency experience assessing susceptible populations. The problem formulation step focuses on the life-stage–specific nature of the analysis to include scoping- and screening-level questions for hazard characterization, dose–response, and exposure assessment. The risk characterization step recognizes the need to consider life-stage–specific risks and explicitly describes the uncertainties and variability in the database. It is important to note that, within this framework, life-stage–specific data gaps are not meant to convey an increase in the uncertainty to be applied in a given risk assessment, but rather to consider life-stage–specific data in order to better characterize the risk to susceptible groups within the population.

Impact/Outcomes

This research program reduces uncertainty in risk assessment by

- Providing leadership in risk assessment by developing and publishing a framework addressing the questions of why and how an improved children's health risk assessment will strengthen the overall risk assessment process across the Agency
- Supporting ORD research: (1) more complete evaluation of the potential for vulnerability at different life stages, (2) evaluation of the potential for toxicity after exposure during all developmental life stages, (3)integration of adverse health effects and exposure information across life stages, and (4) focus on the underlying biological events and critical developmental periods for incorporating mode of action considerations.